



# Leica ICC50 Manual

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# General Instructions

## Safety concept

Before using your Leica ICC 50 camera for the first time, please read the "Safety concept" brochure included with your instrument. It contains additional information about handling and care.



## Use in clean rooms

The Leica ICC 50 camera can be used in clean rooms without any problems.

## Cleaning

- Do not use any unsuitable cleaning agents, chemicals or techniques for cleaning.
- Never use chemicals to clean colored surfaces or accessories with rubberized parts. This could damage the surfaces, and specimens could be contaminated by abraded particles.
- In most cases, we can provide special solutions on request. Some products can be modified, and we can offer other accessories for use in clean rooms.

## Servicing

- Repairs may only be carried out by Leica Microsystems-trained service technicians. Only original Leica Microsystems spare parts may be used.

## Responsibilities of person in charge of instrument

- Ensure that the Leica stereomicroscope is operated, maintained and repaired by authorized and trained personnel only.

## Safety concept

The Leica ICC 50 camera include an interactive CD-ROM with all relevant user manuals. Keep it in a safe place, and readily accessible to the user. User manuals and updates are also available for you to download and print from our web site at [www.leica-microsystems.com](http://www.leica-microsystems.com).

This operating manual describes the special functions of the individual modules of the Leica DM stereomicroscopy series and contains important instructions for their operational safety, maintenance, and accessories.

The "Safety concept" booklet contains additional safety information regarding the service work, requirements and the handling of stereomicroscope, accessories and electrical accessories as well as general safety instructions.

You can combine individual system articles with articles from external suppliers (e.g. cold light sources, etc.). Please read the user manual and the safety requirements of the supplier.

Before installing, operating or using the instruments, read the user manuals listed above. In particular, please observe all safety instructions.

To maintain the unit in its original condition and to ensure safe operation, the user must follow the instructions and warnings contained in these user manuals.

## Symbols used

### Warning of a danger



This symbol indicates especially important information that must be read and complied with. Failure to comply can cause the following:

- Hazards to personnel
- Functional disturbances or damaged instruments

### Warning of hazardous electrical voltage



This symbol indicates especially important information that, if not observed, can cause the following:

- Hazards to personnel
- Functional disturbances or damaged instruments.

### Danger due to hot surface



This symbol warns against touching hot surfaces, e.g. those of light bulbs.

### Important information



This symbol indicates additional information or explanations that intend to provide clarity.

# Safety regulations

## Description

The individual modules fulfill the highest requirements for observation and documentation of the Leica ICC 50 camera.

## Designated use

- See "Safety concept" booklet

## Non-intended use

- See "Safety concept" booklet

The devices and accessories described in this operating manual have been tested for safety and potential hazards. The responsible Leica affiliate must be consulted whenever the device is altered, modified or used in conjunction with non-Leica components that are outside of the scope of this manual.

Unauthorized alterations to the instrument or noncompliant use shall void all rights to any warranty claims!

## Location of use

- See "Safety concept" booklet
- Set up the electrical components at least 10 cm from walls and combustible objects.
- Avoid large temperature fluctuations, direct sunlight and vibrations. These conditions can distort measurements and micro-graphic images.
- In warm and warm-damp climatic zones, the individual components require special care in order to prevent the build up of fungus.

## Requirements for the owner/operator

- See "Safety concept" booklet

Ensure that:

- The Leica ICC 50 camera is operated, maintained and repaired by authorized and trained personnel only.
- All operators have read, understood and observe this user manual, and particularly the safety instructions.

## Safety regulations (continued)

### Repair, service work

- See "Safety concept" booklet
- Only original Leica Microsystems spare parts may be used.
- Before opening the instruments, switch off the power and unplug the power cable.
- Touching the live circuit can cause injury.

### Transport

- Use the original packaging for shipping or transporting the individual modules of the Leica ICC 50 camera.
- In order to prevent damage from vibrations, disassemble all moving parts that (according to the user manual) can be assembled and disassembled by the customer and pack them separately.

### Installation in third-party products

- See "Safety concept" booklet

### Disposal

- See "Safety concept" booklet

### Legal regulations

- See "Safety concept" booklet

### EC Declaration of Conformity

- See "Safety concept" booklet

### Health risks

Workplaces equipped with stereomicroscopes facilitate and improve the viewing task, but they also impose high demands on the eyes and holding muscles of the user. Depending on the duration of uninterrupted work, asthenopia and musculoskeletal problems may occur. For this reason, appropriate measures for reduction of the workload must be taken:

- Optimal arrangement of workplace, work assignments and work flow (changing tasks frequently).
- Thorough training of the personnel, giving consideration to ergonomic and organizational aspects.

The ergonomic design and construction of the Leica DM stereomicroscopy series are intended to reduce the exertion of the user to a minimum.



# The Leica ICC 50

# Introduction

Thank you for purchasing the Leica ICC 50 Digital Camera Module from Leica Microsystems. The Leica ICC 50's exclusive design features make it a truly versatile, high-quality digital camera for educational and other routine applications.



This instrument should only be used as described.

## Unpacking

- Carefully remove the components from the packing box.
- The contents include the camera module, CD with imaging software, and USB cable.
- If you ordered the Stand-alone Kit for operating the Leica ICC 50 without a computer, you have also received a power supply, video cable, and SD memory card.



- Please do not discard any of the packing materials. They should be used for safely storing and transporting the instrument should the need arise.



# Get Ready!

# Preparation for Use

## Tools used

- Allen key



Do not insert anything except the SD memory card into the card slot – danger of short circuit and electric shock!



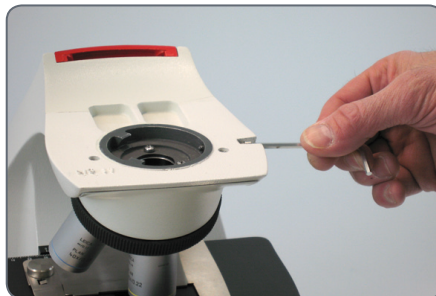
The Leica ICC 50 camera module fits between the microscope stand and the microscope's viewing tube.

## Preparation for Use

1. If the microscope's viewing tube is in place, remove it.

Attach the Leica ICC 50 to the microscope stand:

2. Slightly unscrew the set screw (located on top of the stand) with the Allen key tool provided with the microscope.



3. Insert the dovetail (see the underside of the Leica ICC 50) into the stand support.

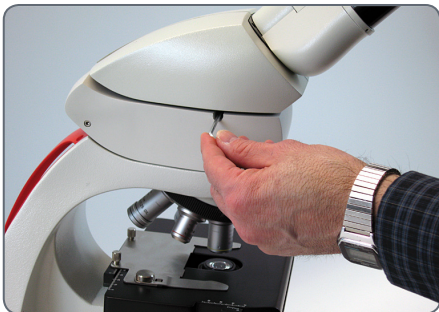


4. Tighten the set screw firmly without forcing it.



## Preparation for Use (cont.)


5. Attach the microscope viewing tube onto the Leica ICC 50 using the set screw, which is located on the left side of the Leica ICC 50 camera module.






# Get Set!

## Connection and Operation for Imaging using a Windows-Computer


 For Computer Mode, instructions on installing and using the accompanying software, are supplied on the CD ROM which comes with the ICC 50.

 10× eyepieces have a fixed circular field of view of 18 mm or 20 mm diameter. The Leica ICC 50's field of view, however, is rectangular with a diagonal of 16.4 mm to ensure an even field on the digital image. As a result, the image field of the camera is smaller than the object field seen through the eyepieces.

### Installing and Connecting


1. Insert the provided CD into your computer, and follow the instructions to load the software.
2. Insert the Leica ICC 50's USB cable into the camera's USB port, and attach other end of the cable to your computer.



 The Leica ICC 50 is now powered from your computer via the USB cable. As the camera is powered, the LED signal, located on the Leica ICC 50, will quickly change from yellow to red to green. When the LED is green, you are ready to open the software and view, acquire, or project images.





4. Follow the software instructions to adjust and capture an image.
5. If you are using a projector, connect your computer to the projector using the cable that came with your projector.

 An image cannot be seen through the projector until the live image appears on your computer.



## Capturing Images without a computer

 In order to use this mode, you must have an SD card with free memory on it. If the SD memory card is full, the Leica ICC 50's LED will remain red and you will not be able to capture any more images.

 In order to use this mode, you cannot be connected to a computer at the same time. If the Leica ICC 50 camera is connected to a computer, you will not be able to capture pictures onto the SD memory card.

### Attaching the power cable

1. Attach the power supply cable into the power-jack in the back of the Leica ICC 50 and attach the other end into an appropriate power outlet.



- The LED on the Leica ICC 50 will change from yellow to red.



## Capturing Images without a computer (cont.)

2. Insert the SD memory card into the slot on the side of the Leica ICC 50 until the card clicks into place.



The camera's LED will turn green. The Leica ICC 50 is now ready to capture images onto the SD memory card.

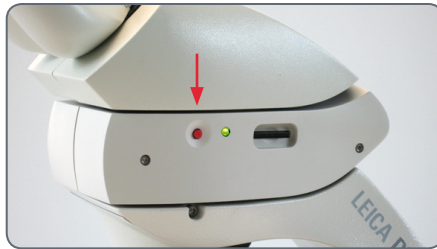


### Capturing an image

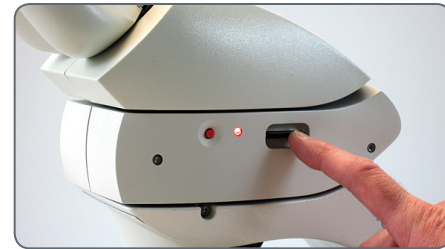


It is critical to properly set the microscope eyepieces' diopters to ensure that the images on the SD memory card are in focus when the image is in focus through the microscope's eyepieces. Refer to the microscope's User Manual for proper diopter setting. You can also use the analog output and an analog video display (not provided) as a focusing aid. See next section for proper analog video setup.

1. To capture an image onto the SD memory card, lightly press the red image capture button, located on the side of the Leica ICC 50 camera.



- You will hear a beep to acknowledge the button was pressed.
  - The camera's LED flashes green while the image is being captured.
  - You will hear another beep when the Leica ICC 50 has completed capturing the image.
2. When you are finished capturing images, press the SD memory card into the slot and it will pop out of the slot. You can now remove it and view the images on your computer using an appropriate SD memory card reader.



## How to handle SD memory cards



Some SD memory cards may have a write-protect tab. Sliding the tab downward prevents recording of data and protects existing data (e.g. images). When recording to, erasing from or formatting the memory card, slide the tab upward.

Ensure that the memory card is correctly oriented before inserting it in the camera. It may damage the camera if inserted backward by mistake.

### Cautions When Handling SD memory cards:

- Memory cards are high-precision electronic devices. Do not bend them, apply force to them, or subject them to shocks or vibration.
- Do not attempt to disassemble or alter the memory card.
- Do not allow dirt, water or foreign objects to contact the terminals on the back of the card. Do not touch the terminals with your hands or metal objects.
- Do not peel away the original label on the memory card or cover it with another label or sticker.
- When writing on the memory card, use a soft point pen (e.g. felt-tip pen). Using a sharp point pen (e.g. ball-point pen) or pencil may damage the memory card or corrupt the recorded data.
- Since some or all of the data recorded on the memory card may be corrupted or erased by electrical noise, static electricity, camera or card malfunction, making a backup copy of important data is recommended.
- Moving a memory card rapidly between temperature extremes will cause conden-

sation to form in the card and lead to a malfunction. To avoid condensation, place the memory card in a sealed plastic bag before moving it into a different temperature zone and allow it to adjust slowly to the new temperature.

- If condensation forms on the memory card, store it at room temperature until the water droplets have evaporated naturally.
- Do not use or store memory cards in locations subject to dust or sand nor in locations subject to high humidity and high temperatures




## Using Analog Video without a computer

1. Attach the power supply cable into the power-jack in the back of the Leica ICC 50 camera and the other end into an appropriate power outlet.
2. Attach the video cable into the "Video" connector in the back of the Leica ICC 50 and the other end into the "Composite Video In" connector of your Analog device (projector, monitor, recorder, etc.).



Both cables are now connected at the back of the Leica ICC 50.

### Changing the video standard

 If you see a distorted image or do not see an image at all on your analog device, it may mean that you have to change the video setting for a different International Standard.

1. Carefully insert a pointed object, such as a ball point pen, into the "NTSC/PAL" reset hole of the Leica ICC 50.



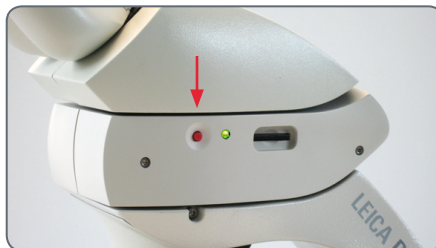
You can now toggle between the two International Standards to choose the correct one.

## Setting a new white balance for the ICC 50

If you depress and hold the red exposure button for more than 10 seconds, the camera is reset and a new white balance is generated.

Make sure that there is no sample in the beam path and that a standard illumination is available when you reset the camera.

It is recommended to set a new white balance each time you change the type or color temperature of the illumination. This is especially needed when you work with halogen light which can be turned from low intensity yellow to a high intensity blue light. The new white balance setting will generate a neutral background for both illuminations.





# Go!



## Ready! Set! Go!

Now all you need to do is properly set up your microscope, capture your images, and enjoy!

# Care and Cleaning



## Care and Cleaning

### General

- Keeping all optical components clean is important for maintaining good optical performance.
- Always cover the microscope with the Leica ICC 50 camera with the plastic dust cover (provided with the microscope), when the instrument is not in use.
- If any optical surface becomes badly coated with dust or dirt, it should be cleaned by blowing the surface with a syringe or brushing it off with a camel hair brush before attempting to wipe the surface clean.
- Optical surfaces should be cleaned with a lint-free cloth, lens tissue or a cotton swab moistened with methanol or commercially available glass cleaner. Do not use alcohol.

- It is very important to avoid the excessive use of solvent. The lint-free cloth, lens tissue or cotton swab should be moistened with solvent, but not be wet enough for the solvent to seep around the lens.

### Electrical Considerations



Risk of electric shock. Removing the covers of the Leica ICC 50 Camera or the Stand-alone Kit exposes hazardous voltages, which if contacted, could cause injury or death. Please contact an authorized Leica Microsystems dealer for technical service.



# Specifications

# Leica ICC 50 camera module

## Digital Camera ICC 50

- Weight 700 g (camera only)
- Exposure time 2 msec – 2 sec
- Live picture on computer monitor up to 15 fps (1024×768 Pixel)
- Full frame capture image 2048 × 1536 pixels, 3.1 Mpixel
- Sensor Size: 6.55mm × 4.92mm
- Pixel size: 3.2μm × 3.2μm

## Sensor

- Type of sensor: Micron 1/2" CMOS
- Gain 1× – 20×
- Color depth 24-bit
- Data format JPEG / TIFF/ BMP

## Software

Operating systems: Windows XP, Windows Vista

Leica software: LAS EZ software (PC),

## Mechanical and optical Interfaces

- Fits between Viewing Tube and Stand via Standard Leica Dovetail
- Center offset of the top dovetail to the bottom < 0.4mm
- Light distribution optical 50% / camera 50%
- No reflections, dust or impurities visible on prism
- Internal video magnification 0.5×
- Sensor centered to optical axis ± 0.1mm
- Sensor horizontally / vertically aligned ±1 degree

## Electronic Interfaces

- Compatibility: USB 2.0 mini plug female
- Analog video port (RCA-connector) with composite video signal PAL or NTSC
- Pinhole switch to select between PAL or NTSC video mode
- 2 color LED for power on (green) / recording (red)
- Integrated slot SD (Secure Digital)
- Recording switch for image capture
- Reset feature when pressing the recording switch for more than 5 seconds
- Power consumption 4 W

## Leica ICC 50 camera module (cont.)

### Other

- Power supply via USB 2.0
- External power supply optional
- Operating temperature range +5°C – 50°C Humidity 10 – 90%
- Recommended computer configuration:
- Intel Pentium 4 or DuoCore, 2GHz, 1GB RAM
- 24 bit graphics, 1024 × 768, CD-ROM drive
- CE conformity declaration available
- cUL

### Approved Standards

- EMI/RFIEN55011-B EN50082-1
- EMC61000-3-261000-3-3

### Supply Voltage and Range Supply Frequency

- Input: 5VDC/500mA
- If using the Stand-alone Kit:  
Input: 100-240 VAC, 50/60 Hz, 0.5 A  
Output: 5 VDC, 2.4 A, 12 W max.

### Range of Environmental Conditions

- Altitude up to 2000m
- Indoor use only
- Temperatures 5 °C to 40 °C
- Installation Category II  
(Overvoltage Category)
- Pollution degree 2
- Maximum relative humidity 80% for temperatures up to 31 °C;  
decreasing linearly to 50% relative humidity at 40 °C.